

and protection. New Jersey is a major thoroughfare for large numbers of Neotropical songbirds during spring and fall migration. The availability of suitable stopover habitats that provide the food resources necessary for birds to accumulate energy quickly and safely is essential. National Weather Service Doppler radar is an effective approach for identifying stopover habitats (see image pair, page 45) because it can monitor bird movements at spatial and temporal scales and provide information about site-use frequency and bird density at particular sites. Combining radar data with land-use and land-cover data in a Geographic Information System leads to determining the use of specific habitat types by migratory birds during stopovers. This information is crucial for ranking the importance of particular sites and for making sound land management decisions regarding the conservation of habitats used by songbirds during migration stopovers.

A different kind of migratory bird site inventory has taken place at North Cascades National Park (Washington) as part of a broader regional effort. Here the focus was on the black swift, a species that is not effectively surveyed by standardized approaches for broad-scale landscape- or habitat-based monitoring, such as the roadside Breeding Bird Survey. The black swift is a Partners in Flight Continental Watch List Species, a priority species in the Northern Pacific Rainforest Bird Conservation Region, and a priority species in Bird Conservation Plans for Oregon, Washington, British

“National park units established to protect cultural resources ... play an important role in the conservation of migratory birds.”

Columbia, and Alaska. Prior to this project, no survey of this species had ever been conducted in the Cascade Range of British Columbia and Washington. Because black swifts breed on steep canyon walls close to waterfalls, a special protocol is required to determine their distribution and abundance. Roberto Quintero-Dominguez, a Park Flight international intern from Mexico, was part of a team of NPS employees and North Cascades Institute graduate students who conducted these physically challenging inventories of selected waterfalls in North Cascades. The high percentage of swifts observed at waterfalls and the large number counted on individual surveys suggest that falls within the park are extremely important nesting habitat for this species. ■

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Understanding land bird diversity in the Klamath region

By Daniel A. Sarr, Nat Seavy, John D. Alexander, and Paul Hosten

What drives bird diversity in the Klamath region in the Northwest? Scientists are learning that fundamental conservation questions such as this often must be addressed through landscape-scale analyses. Therefore, network Inventory and Monitoring programs, other federal agencies, and nonprofit conservation organizations are partnering to consider regional needs through development of consistent inventory data sets across park and agency boundaries. For example, scientists who analyzed data collected during field inventories of land birds in



Yellow-rumped warbler, a species that prefers high elevations, is abundant at Crater Lake National Park (high elevation), less common in Cascade-Siskiyou National Monument (middle elevation), and nearly absent from Whiskeytown National Recreation Area (low to middle elevation).

three federal conservation preserves believe environmental conditions, such as climate and habitat, may be important drivers of bird diversity patterns in the Klamath region.

In 2003, scientists from the National Park Service (NPS) Inventory and Monitoring Program, the Bureau of Land Management (BLM), and the nonprofit Klamath Bird Observatory jointly studied bird diversity in Crater Lake National Park, Oregon (administered by NPS); Cascade-Siskiyou National Monument, Oregon (BLM); and Whiskeytown National Recreation Area, California (NPS). Crater Lake National Park, which has diverse and pristine habitat but a cool climate, supported a lower diversity of birds (38 species recorded) than the warmer, lower-elevation parks. Whiskeytown National Recreation Area, the lowest, warmest preserve, however, was apparently no richer in species than Cascade-Siskiyou National Monument, which occupies intermediate elevations (70 vs. 78 bird species recorded, respectively).

Cascade-Siskiyou straddles the crest of the Cascade Range and has exceptional variability in climate and vegetation, which may explain its high bird diversity. Most bird species showed peak abundance in either Crater Lake or Whiskeytown, suggesting that many bird species have preferences for either high or low elevations during their breeding season. However, each of the three preserves supports distinctive and complementary bird species, suggesting they play different roles in the conservation of regional land bird diversity. ■

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